DEPARTMENT OF ENERGY

10 CFR Part 430

[EERE-2019-BT-STD-0040]

RIN 1904-AE52

Energy Conservation Program: Energy Conservation Standards for Consumer Products/Certain Commercial and Industrial Equipment; Early Assessment Review; Ceiling Fan Light Kits

AGENCY: Office of Energy Efficiency and Renewable Energy, Department of Energy.

ACTION: Request for information.

SUMMARY: The U.S. Department of Energy ("DOE") is undertaking an early assessment review for amended energy conservation standards for ceiling fan light kits ("CFLKs") to determine whether to amend applicable energy conservation standards for this product. Specifically, through this request for information ("RFI"), DOE seeks data and information to evaluate whether amended energy conservation standards would result in significant savings of energy; be technologically feasible; and be economically justified. DOE welcomes written comments from the public on any subject within the scope of this document (including those topics not specifically raised), as well as the submission of data and other relevant information concerning this early assessment review.

DATES: Written comments and information will be accepted on or before **[INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL REGISTER*]**.

ADDRESSES: Interested persons are encouraged to submit comments using the Federal eRulemaking Portal at *https://www.regulations.gov*. Follow the instructions for submitting comments. Alternatively, interested persons may submit comments, identified by docket number EERE-2019-BT-STD-0040, by any of the following methods:

1. *Federal eRulemaking Portal*: *https://www.regulations.gov*. Follow the instructions for submitting comments.
2. *E-mail*: to *CFLK2019STD0040@ee.doe.gov*. Include docket number EERE-2019-BT-STD-0040 in the subject line of the message.

No telefacsimiles ("faxes") will be accepted. For detailed instructions on submitting comments and additional information on this process, see section III of this document.

Although DOE has routinely accepted public comment submissions through a variety of mechanisms, including postal mail and hand delivery/courier, the Department has found it necessary to make temporary modifications to the comment submission process in light of the ongoing Covid-19 pandemic. DOE is currently suspending receipt of public comments via postal mail and hand delivery/courier. If a commenter finds that this change poses an undue hardship, please contact Appliance Standards Program staff at (202) 586-1445 to discuss the need for alternative arrangements. Once the Covid-19 pandemic health emergency is resolved, DOE anticipates resuming all of its regular options for public comment submission, including postal mail and hand delivery/courier.

Docket: The docket for this activity, which includes *Federal Register* notices, comments, and other supporting documents/materials, is available for review at *https://www.regulations.gov*. All documents in the docket are listed in the *https://www.regulations.gov* index. However, some documents listed in the index, such as those containing information that is exempt from public

disclosure, may not be publicly available.

The docket web page can be found at *https://www.regulations.gov/docket?D=EERE-2019-BT-STD-0040*. The docket web page contains instructions on how to access all documents, including public comments, in the docket. See section III for information on how to submit comments through *https://www.regulations.gov*.

FOR FURTHER INFORMATION CONTACT: Dr. Stephanie Johnson, U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Building Technologies Office, EE-5B, 1000 Independence Avenue, SW., Washington, DC, 20585-0121. Telephone: (202) 287-1943. E-mail: *ApplianceStandardsQuestions@ee.doe.gov*.

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For further information on how to submit a comment or review other public comments and the docket contact the Appliance and Equipment Standards Program staff at (202) 287-1445 or by e-mail: *ApplianceStandardsQuestions@ee.doe.gov*.

SUPPLEMENTARY INFORMATION:

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I. Introduction

DOE has established an early assessment review process to conduct a more focused analysis to evaluate, based on statutory criteria, whether a new or amended energy conservation standard is warranted. Based on the information received in response to the RFI and DOE's own analysis, DOE will determine whether to proceed with a rulemaking for a new or amended energy conservation standard. If DOE makes an initial determination that a new or amended energy conservation standard would satisfy the applicable statutory criteria, or DOE's analysis is inconclusive, DOE would undertake the preliminary stages of a rulemaking to issue a new or amended energy conservation standard. If DOE makes an initial determination based upon available evidence that a new or amended energy conservation standard would not meet the applicable statutory criteria, DOE would engage in notice and comment rulemaking before issuing a final determination that new or amended energy conservation standards are not warranted.

A. Authority and Background

The Energy Policy and Conservation Act, as amended ("EPCA"),[1] authorizes DOE to regulate the energy efficiency of a number of consumer products and certain industrial equipment. (42 U.S.C. 6291–6317) Title III, Part B[2] of EPCA established the Energy

[1] All references to EPCA in this document refer to the statute as amended through the Energy Act of 2020, Public Law 116-260 (Dec. 27, 2020).
[2] For editorial reasons, upon codification in the U.S. Code, Part B was redesignated Part A.

Conservation Program for Consumer Products Other Than Automobiles. These products include ceiling fan light kits ("CFLKs"), the subject of this document. (42 U.S.C. 6295(ff); 42 U.S.C. 6291(50)) EPCA prescribed energy conservation standards for these products, and authorized DOE to consider whether to amend these standards. (42 U.S.C. 6295(ff)(2)-(5))

Under EPCA, DOE's energy conservation program consists essentially of four parts: (1) testing, (2) labeling, (3) Federal energy conservation standards, and (4) certification and enforcement procedures. Relevant provisions of EPCA specifically include definitions (42 U.S.C. 6291), test procedures (42 U.S.C. 6293), labeling provisions (42 U.S.C. 6294), energy conservation standards (42 U.S.C. 6295), and the authority to require information and reports from manufacturers (42 U.S.C. 6296).

Federal energy efficiency requirements for covered products established under EPCA generally supersede State laws and regulations concerning energy conservation testing, labeling, and standards. (42 U.S.C. 6297(a)-(c)) DOE may, however, grant waivers of Federal preemption for particular State laws or regulations, in accordance with the procedures and other provisions set forth under 42 U.S.C. 6297(d).

DOE must follow specific statutory criteria for prescribing new or amended standards for covered products. EPCA requires that any new or amended energy conservation standard prescribed by the Secretary of Energy ("Secretary") be designed to achieve the maximum improvement in energy or water efficiency that is technologically feasible and economically justified. (42 U.S.C. 6295(o)(2)(A)) The Secretary may not prescribe an amended or new standard that will not result in significant conservation of energy, or is not technologically feasible or economically justified. (42 U.S.C. 6295(o)(3))

EPCA also requires that, not later than 6 years after the issuance of any final rule establishing or amending a standard, DOE evaluate the energy conservation standards for each type of covered product, including those at issue here, and publish either a notice of determination that the standards do not need to be amended, or a notice of proposed rulemaking ("NOPR") that includes new proposed energy conservation standards (proceeding to a final rule, as appropriate). (42 U.S.C. 6295(m)(1)) DOE is publishing this RFI in accordance with the 6-year lookback requirement.

B. Rulemaking History

EPCA initially established individual energy conservation standards for three groups of CFLKs manufactured on or after January 1, 2007: (1) those having medium screw base sockets ("Medium Screw Base product class"); (2) those having pin-based sockets for fluorescent lamps ("Pin-Based product class"); and (3) any CFLKs other than those included in the Medium Screw Base product class or the Pin-Based product class, including candelabra screw base sockets ("Other Base Type product class"). (42 U.S.C. 6295(ff)(2)-(4)) In a technical amendment published on October 18, 2005, DOE codified the EPCA requirements for the Medium Screw Base and Pin-Based product classes. 70 FR 60407, 60413. EPCA also specified that if DOE did not issue a final rule on energy conservation standards for Other Base Type product class CFLKs by January 1, 2007, a 190 watt ("W") limit would apply to those products manufactured after January 1, 2009. (42 U.S.C. 6295(ff)(4)(C)) DOE did not issue a final rule on standards for CFLKs by that date, and published a technical amendment that codified EPCA's requirements for Other Base Type product class CFLKs, which applied to such CFLKs manufactured on or after January 1, 2009. 72 FR 1270, 1273-1274 (Jan. 11, 2007). In another technical amendment final rule to adopt updates to EPCA from the Energy Independence and Security Act of 2007, DOE added a provision that CFLKs with sockets for pin-based fluorescent lamps must be packaged with lamps to fill all sockets. 74 FR 12058, 12069 (Mar. 3, 2009). (42 U.S.C.

6295(ff)(4)(C)(ii))

On January 6, 2016, DOE published a final rule adopting amended performance standards for CFLKs manufactured on or after January 7, 2019. 81 FR 580 ("January 2016 Final Rule"). The January 2016 Final Rule established a minimum efficacy requirement for all CFLKs, expressed in lumens per watt ("lm/W") that is applicable based on the lumen output of each basic model of lamp packaged with the basic model of CFLK or each basic model of integrated solid-state lighting ("SSL") in the CFLK basic model. *Id.* at 81 FR 581. Subsequently, DOE published a final rule that changed the compliance date from January 7, 2019 to January 21, 2020 to comply with Public Law 115–161, "Ceiling Fan Energy Conservation Harmonization Act" (the "Act"), which was signed into law on April 3, 2018. 83 FR 22587 (May 16, 2018). The Act amended the compliance date for the CFLK standards to establish a single compliance date for the energy conservation standards for both CFLKs and ceiling fans. *Id.* The current energy conservation standards are located in title 10 of the Code of Federal Regulations ("CFR") part 430, § 430.32(s)(6).

On December 24, 2015, DOE published a final rule ("December 2015 Final Rule") updating the CFLK test procedure. 80 FR 80209. The currently applicable DOE test procedure for CFLKs appears at 10 CFR part 430, subpart B, appendices V and V1 ("appendices V and V1").

II. Request for Information

DOE is publishing this RFI to collect data and information during the early assessment review to inform its decision, consistent with its obligations under EPCA, as to whether the Department should proceed with an energy conservation standards rulemaking. Below DOE has identified certain topics for which information and data are requested to assist in the evaluation

of the potential for amended energy conservation standards. DOE also welcomes comments on other issues relevant to its early assessment that may not specifically be identified in this document.

A. Significant Savings of Energy

The January 2016 Final Rule established an energy conservation standard for CFLKs that is expected to result in 0.049 quadrillion British thermal units ("quads") of full-fuel-cycle ("FFC") energy savings over a 30-year period. 81 FR 580, 582. Additionally, in the January 2016 Final Rule, DOE estimated that an energy conservation standard established at an efficiency level equivalent to that achieved using the maximum available technology ("max-tech") would have resulted in 0.070 quads of FFC energy savings.[3] 81 FR 580, 620.

While DOE's request for information is not limited to the following issues, DOE is particularly interested in comments, information, and data on the following.

1. Energy Use Analysis

The purpose of the energy use analysis is to determine the annual energy consumption of CFLKs at different efficiencies in representative U.S. homes and commercial buildings, and to assess the energy savings potential of increased CFLK efficacy. To develop annual energy use estimates in the January 2016 Final Rule, DOE multiplied CFLK input power by the hours of use ("HOU") per year. The energy use analysis estimates the range of energy use of CFLKs in the field (*i.e.*, as they are actually used by consumers). 81 FR 580, 598.

In the January 2016 Final Rule, to determine the average HOU of CFLKs in the

[3] Table V.10 outlines the Cumulative national Energy Savings for CFLKs during a 30 year period. The max-tech trial standard level was TSL 4, which DOE estimated would result in 0.070 quads of FFC energy. 81 FR 580, 620.

residential sector, DOE used data from various field metering studies of GSL operating hours in the residential sector. To account for any difference in CFLK HOU compared to GSL HOU, DOE considered two factors: (1) the relative HOU for GSLs installed in ceiling light fixtures compared to all GSLs based on data from the Residential Lighting End-Use Consumption Study ("RLEUCS"),[4] and (2) the HOU associated with the specific room types in which CFLKs are installed based on installation location data from a Lawrence Berkeley National Laboratory survey of ceiling fan and CFLK owners ("LBNL survey")[5] and room-specific HOU data from RLEUCS. DOE assumed that CFLK operating hours do not vary by light source technology. DOE estimated that CFLKs are used an average of 2.0 hours per day in the residential sector. 81 FR 580, 598.

For the commercial sector, the HOU for CFLKs in commercial buildings were developed using lighting data for 15 commercial building types obtained from the 2010 U.S. Lighting Market Characterization ("LMC").[6] For each commercial building type presented in the LMC, DOE determined average HOU based on the fraction of installed lamps utilizing each of the light source technologies typically used in CFLKs and the HOU for each of these light source technologies. A national-average HOU for the commercial sector was then estimated by weighting the building-specific HOU for lamps used in CFLKs by the relative floor space of each building type as reported in the 2003 Energy Information Administration ("EIA") Commercial Buildings Energy Consumption Survey ("CBECS").[7] 81 FR 580, 598-599. DOE

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[4] DNV KEMA Energy and Sustainability and Pacific Northwest National Laboratory. Residential Lighting End-Use Consumption Study: Estimation Framework and Initial Estimates. 2012. (Last accessed December 5, 2019.) *https://www1.eere.energy.gov/buildings/publications/pdfs/ssl/2012_residential-lighting-study.pdf*.

[5] Kantner, C. L. S., S. J. Young, S. M. Donovan, and K. Garbesi. Ceiling Fan and Ceiling Fan Light Kit Use in the U.S.—Results of a Survey on Amazon Mechanical Turk. 2013. Lawrence Berkeley National Laboratory: Berkeley, CA. Report No. LBNL-6332E. (Last accessed June 14, 2016.) *http://www.escholarship.org/uc/item/3r67c1f9*.

[6] Navigant Consulting, Inc. 2010 U.S. Lighting Market Characterization. 2012. U.S. Department of Energy: Washington, D.C. (Last accessed May 4, 2020.) *https://www1.eere.energy.gov/buildings/publications/pdfs/ssl/2010-lmc-final-jan-2012.pdf.*

[7] U.S. Department of Energy–Energy Information Administration. 2003 Commercial Buildings Energy Consumption Survey (CBECS). 2003. (Last accessed June 15, 2016.) *https://www.eia.gov/consumption/commercial/data/2003/index.cfm?view=microdata*.

calculated that, nationwide, CFLKs are used an average of 10.7 hours per day in the commercial sector (see chapter 6 of the January 2016 Final Rule technical support document ["TSD"] [8]).

In the January 2016 Final Rule TSD, DOE did not consider the industrial sector in the analysis because DOE determined that CFLKs are designed almost solely for the low-volume (*i.e.* low air flow) ceiling fan market, which are not suitable for the large spaces characteristic of most industrial buildings (see chapter 6 of the January 2016 Final Rule TSD).

DOE developed its estimate of the power consumption of CFLKs by scaling the input power and lumen output of the representative lamp units from the engineering analysis to account for the lumen output of CFLKs in the market. DOE estimated average CFLK lumen output based on a weighted average of CFLK models from data collected in 2014 from in-store shelf surveys and product offerings on the Internet. DOE estimated the market share of each identified CFLK model based on price. 81 FR 580, 599.

In the January 2016 Final Rule, DOE assumed that the only lighting controls used with CFLKs are dimmers. DOE further assumed that CFLKs did not have dimmable CFLs due to technical issues associated with CFL dimmability. DOE estimated CFLKs with dimmable incandescent and LED light sources to be an equal fraction and total 11 percent, and assumed that dimmable CFLKs have an average energy reduction of 30 percent. DOE used these percentages for both the residential and commercial sector in determining the energy consumption. 81 FR 580, 599. (See chapter 6 of the January 2016 Final Rule TSD).

For further details regarding the prior energy use methodology, see chapter 6 of the January 2016 Final Rule TSD.

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[8] Available at *https://www.regulations.gov/document/EERE-2012-BT-STD-0045-0121*.

Issue 1: DOE requests comments on whether the methodology and data sources for determining residential and commercial HOU for CFLKs need to be changed, beyond updating to more recent versions of the sources if updated versions exist.

Issue 2: DOE seeks feedback on its methodology used to determine impact of lighting controls for CFLKs in the January 2016 Final Rule, and whether it is appropriate for future potential analyses.

Issue 3: DOE requests information on the percent of CFLKs that incorporate lighting controls, the types of lighting controls incorporated, and data on how the controls affect typical energy consumption.

2. Shipments

DOE develops shipments forecasts of CFLKs to calculate the national impacts of potential amended energy conservation standards on energy consumption. DOE shipment projections are based on available historical data and an analysis of key market drivers for each product. Historical shipment data are used to build up a product stock and to calibrate the shipments model.

The shipments model projects shipments over a 30-year analysis period for the base case (no-new-standards) and for all standards cases. In the January 2016 Final Rule, shipments were calculated for the residential and commercial sectors by assigning 95 percent of shipments to the residential sector and 5 percent to the commercial sector. DOE further assumed in its analysis that CFLKs are primarily found on standard and hugger ceiling fans. DOE also assumed that the distribution of CFLKs by light source technology in the commercial sector is the same as the

light source technology distribution in the residential sector. 81 FR 580, 603. Specifically, the January 2016 Final Rule projected the breakout of shipments across years 2017 through 2020, as shown in Table II.1. (See January 2016 Final Rule Ceiling Fan Light Kits Final Rule National Impact Analysis (NIA) Spreadsheets.[9])

Table II.1 Projected CFLK Shipments from the January 2016 Final Rule (millions of units)

2017	2018	2019	2020
17.2	17.6	17.7	18.1

For further details regarding the prior shipments analysis, see chapter 9 of the January 2016 Final Rule TSD.

Issue 4: DOE seeks feedback on how the shipments in the years shown in Table II.1 compare to actual shipments of CFLKs in those years. DOE also requests data and information on historical shipments of CFLKs and/or suggestions for data sources to use.

Issue 5: DOE requests information on the percent of CFLKs sold with a ceiling fan versus without a ceiling fan and the percent of CFLKs sold into the residential sector versus the commercial sector. DOE also requests feedback on whether these percentages have changed over time or whether they are expected to change in the future.

Issue 6: DOE requests information on any potential market trends that may affect future shipments of CFLKs and/or ceiling fans. DOE also seeks information regarding data that might reasonably and substantively inform the distribution forecast of efficacy levels for CFLKs.

[9] Available at *https://www.regulations.gov/document/EERE-2012-BT-STD-0045-0123*.

3. National Impact Analysis

The purpose of the national impact analysis ("NIA") is to estimate the aggregate impacts of potential efficiency standards at the national level. DOE evaluates the impacts of potential amended standards by comparing a no-new-standards-case projection with standards-case projections. The no-new-standards-case projection characterizes energy use and consumer costs in the absence of amended energy conservation standards, whereas the standards-case projections make the same characterizations while eliminating products from the market that don't meet the standard. DOE develops market share distributions for CFLKs at each efficacy level ("EL") in the no-new-standards case and each of the standards cases in its shipments analysis.

Table II.2 summarizes the inputs and methods DOE used in the NIA for the January 2016 Final Rule. See chapter 10 of the January 2016 Final Rule TSD for further details.

Table II.2 Summary of Inputs and Methods for the National Impact Analysis in the January 2016 Final Rule

Inputs	Method
Shipments	Annual shipments from shipments model.
No-new-standards Case Forecasted Efficacies	Estimated by market-share module of shipments model including impact of SSL incursion.
Standards Case Forecasted Efficacies	Estimated by market-share module of shipments model including impact of SSL incursion.
Annual Energy Consumption per Unit	Annual weighted-average values are a function of energy use at each EL, including impacts of replacing CFLK lamps over the CFLK lifetime.
Total Installed Cost per Unit	Annual weighted-average values are a function of cost at each EL. Incorporates projection of future LED lamp prices based on historical data.
Annual Energy Cost per Unit	Annual weighted-average values as a function of the annual energy consumption per unit and energy prices.
Repair and Maintenance Cost per Unit	Annual values do not change with EL. Replacement lamp costs are calculated for each EL over the analysis period.
Energy Prices	*AEO 2015* forecasts (to 2040) and extrapolation through 2048.
Energy Site-to-Primary and full fuel cycle (FFC) Conversion	A time-series conversion factor based on *AEO 2015*.
Discount Rate	Three and seven percent.

Issue 7: DOE requests whether the methodologies employed in the NIA for the January 2016 Final Rule remain appropriate. If not, DOE requests information and data on changes to the methodologies that should be considered.

Issue 8: DOE requests feedback on whether potential standards for CFLKs may cause consumers to purchase non-CFLK lighting products.

B. Product Classes

When evaluating and establishing energy conservation standards, DOE may divide covered products into product classes by the type of energy used, or by capacity or other performance-related features that justify a different standard. (42 U.S.C. 6295(q)) In making a determination whether capacity or another performance-related feature justifies a different standard, DOE must consider such factors as the utility of the feature to the consumer and other factors DOE deems appropriate. (*Id.*)

CFLKs manufactured on or after January 21, 2020, must be packaged with lamps to fill

all sockets, and each basic model of lamp packaged with the basic model of CFLK and each basic model of integrated SSL in the CFLK basic model must meet a minimum efficacy (specified in lm/W) that is determined based on the lumen output of the basic model of lamp or integrated SSL. 10 CFR 430.32(s)(6). CFLKs are not separated into product classes for the purpose of the minimum efficacy requirement. For CFLKs with medium screw base sockets that are packaged with compact fluorescent lamps ("CFLs"), the CFLs must meet specified lumen maintenance, rapid cycle stress, and lifetime requirements. 10 CFR 430.32(s)(6)(i). CFLKs with pin base fluorescent lamps must use an electronic ballast. 10 CFR 430.32(s)(6)(ii).

Issue 9: DOE requests feedback on whether the current single product class for CFLKs under the minimum efficacy requirements is appropriate. Specifically, DOE requests feedback on whether integrated SSL circuitry offers features not available in light emitting diode ("LED") lamps that may be packaged with a CFLK and whether such features impact the efficacy of integrated SSLs as compared to LEDs (if efficacy is impacted, please quantify the impact).

Issue 10: DOE seeks information regarding any new product classes it should consider for inclusion in its analysis. Specifically, DOE requests information on the performance-related features (*e.g.*, base type, lamp length, *etc.*) that provide unique consumer utility and data detailing the corresponding impacts on efficacy that would justify separate product classes (*i.e.*, explanation for why the presence of these performance-related features would decrease efficacy).

C. Technological Feasibility

During the January 2016 Final Rule, DOE considered a number of technology options that manufacturers could use to reduce energy consumption in CFLKs. 81 FR 580, 591.

Issue 11: DOE seeks comment on any changes to these technology options that could affect whether DOE could propose a "no-new-standards" determination, such as an insignificant increase in the range of efficiencies and performance characteristics of these technology options. DOE also seeks comment on whether there are any other technology options that

Issue 12: DOE should consider in its analysis.

While DOE's request for information is not limited to the following issues, DOE is particularly interested in comment, information, and data on the following.

1. Technology Assessment

In analyzing the feasibility of potential new or amended energy conservation standards, DOE uses information about existing and past technology options and prototype designs to help identify technologies that manufacturers could use to meet and/or exceed a given set of energy conservation standards under consideration. In consultation with interested parties, DOE intends to develop a list of technologies to consider in its analysis. That analysis will likely include a number of the technology options DOE previously considered during its most recent rulemaking for CFLKs. A complete list of those prior options appears in Table II.3.

Table II.3 Technology Options for CFLKs Considered in the January 2016 Final Rule

Lamp Type	Name of Technology Option	Description
CFL	Highly Emissive Electrode Coatings	Improved electrode coatings allow electrons to be more easily removed from electrodes, reducing lamp power and increasing overall efficacy.
	Higher-Efficiency Lamp Fill Gas Composition	Fill gas compositions improve cathode thermionic emission or increase mobility of ions and electrons in the lamp plasma.
	Higher-Efficiency Phosphors	Techniques to increase the conversion of ultraviolet ("UV") light into visible light.
	Glass Coatings	Coatings on inside of bulb enable the phosphors to absorb more UV energy, so that they emit more visible light.
	Multi-Photon Phosphors	Emitting more than one visible photon for each incident UV photon.
	Cold Spot Optimization	Improve cold spot design to maintain optimal temperature and improve light output.
	Improved Ballast Components	Use of higher-grade components to improve efficiency of integrated ballasts.
	Improved Ballast Circuit Design	Better circuit design to improve efficiency of integrated ballasts.
	Change in Technology	Replace CFL with LED technology.

Lamp Type	Name of Technology Option	Description
LED lamp	Efficient Down Converters	New high-efficiency wavelength conversion materials, such as optimized phosphor conversion, quantum-dots, have the potential for creating warm-white LEDs with improved spectral efficiency, high color quality, and improved thermal stability.
	Improved Package Architectures	Novel package architectures such as color mixing (RGB+) and hybrid architecture to improve package efficacy.
	Improved Emitter Materials	The development of efficient red, green, or amber LED emitters, will allow for optimization of spectral efficiency with high color quality over a range of correlated color temperature (CCT) and which also exhibit color and efficiency stability with respect to operating temperature.
	Alternative Substrate Materials	Alternative substrates such as gallium nitride (GaN), silicon carbide to enable high-quality epitaxy for improved device quality and efficacy.
	Improved Thermal Interface Materials ("TIMs")	TIMs that enable high-efficiency thermal transfer for long-term reliability and performance optimization of the LED device.
	Optimized Heat Sink Design	Improve thermal conductivity and heat dissipation from the LED chip, thus reducing efficacy loss from rises in junction temperature.
	Active Thermal Management Systems	Devices such as internal fans and vibrating membranes to improve thermal dissipation from the LED chip.
	Device-Level Optics	Enhancements to the primary optic of the LED package such as surface etching that would optimize extraction of usable light from the LED package and reduce losses due to light absorption at interfaces.
	Increased Light Utilization (Secondary Optics)	Reduce or eliminate optical losses from the lamp housing, diffusion, beam shaping, and other secondary optics to increase efficacy using mechanisms such as reflective coatings and improved diffusive coatings.
	Improved Driver Design	Increase driver efficiency through novel and intelligent circuit design.
	AC LEDs	Eliminate the requirements of a driver and therefore reduce efficiency losses from the driver.
	Reduced Current Density	Driving LED chips at lower currents while maintaining light output, and thereby reducing the efficiency losses associated with efficacy droop.

Issue 13: DOE seeks information on the technologies listed in Table II.3 of this document regarding their applicability to the current market and how these technologies may impact the efficacy of light sources in CFLKs as measured according to the DOE test procedure. DOE also seeks information on how these technologies may have changed since they were considered in the January 2016 Final Rule analysis. Specifically, DOE seeks information on the range of efficiencies or performance characteristics that are currently available for each technology option.

Issue 14: DOE seeks information on the technologies listed in Table II.3 of this document regarding their market adoption, costs, and any concerns with incorporating them into products (*e.g.*, impacts on consumer utility, potential safety concerns, manufacturing/production/implementation issues, *etc.*), particularly as to changes that may have occurred since the January 2016 Final Rule.

Issue 15: DOE seeks comment on other technology options that it should consider for inclusion in its analysis and whether these technologies impact product features or consumer utility.

2. Screening Analysis

The purpose of the screening analysis is to evaluate the technologies that improve the efficacy of light sources to determine which technologies will be eliminated from further consideration and which will be passed to the engineering analysis for further consideration. DOE determines whether to eliminate certain technology options from further consideration based on the following criteria:

(1) *Technological feasibility*. Technologies that are not incorporated in commercial products or in working prototypes will not be considered further.

(2) *Practicability to manufacture, install, and service.* If it is determined that mass production of a technology in commercial products and reliable installation and servicing of the technology could not be achieved on the scale necessary to serve the relevant market at the time of the compliance date of the standard, then that technology will not be considered further.

(3) *Impacts on product utility or product availability.* If a technology is determined to have significant adverse impact on the utility of the product to significant subgroups of consumers, or result in the unavailability of any covered product type with performance characteristics (including reliability), features, sizes, capacities, and volumes that are substantially the same as products generally available in the United States at the time, it will not be considered further.

(4) *Adverse impacts on health or safety.* If it is determined that a technology will have significant adverse impacts on health or safety, it will not be considered further.

(5) *Unique-Pathway Proprietary Technologies.* If a design option utilizes proprietary technology that represents a unique pathway to achieving a given efficiency level, that technology will not be considered further due to the potential for monopolistic concerns.

Sections 6(c)(3) and 7(b) of the Process Rule.

Technology options identified in the technology assessment are evaluated against these criteria using DOE analyses and inputs from interested parties (*e.g.*, manufacturers, trade organizations, and energy efficiency advocates). Technologies that pass through the screening analysis are referred to as "design options" in the engineering analysis. Technology options that fail to meet one or more of the five criteria are eliminated from consideration.

Table II.4 summarizes the technology options that DOE screened out in the January 2016 Final Rule, and the applicable screening criteria.

Table II.4 Screened-Out Technology Options from the January 2016 Final Rule

Lamp Type	Screened-Out Technology Option	EPCA Criteria (X = Basis for Screening Out)			
		Technological Feasibility	Practicability to Manufacture, Install, and Service	Adverse Impact on Product Utility	Adverse Impacts on Health and Safety
CFL	Multi-Photon Phosphors	**X**			
LED	Colloidal Quantum Dot Phosphors	**X**			
	Improved Emitter Materials	**X**			

In the January 2016 Final Rule, DOE considered AC LEDs as a design option. 81 FR 580, 592. AC LEDs remove the need for a driver component, potentially reducing efficiency losses. However, in the March 2016 NOPR for general service lamps, DOE screened out this technology option. DOE concluded that because commercial products were only offered by one company, are not available across a range of lumen packages, and are limited to G-shape lamps, the technology option did not meet the criteria of practicability to manufacture, install, and service and adverse impacts on product utility or product availability. 81 FR 14528, 14566 (March 17, 2016). DOE has reviewed the current market and continued to identify only one company that is producing AC LED lamp models. The models are offered with limited characteristics: GU10 base and 400 lumens; candle-shaped and around 260 lumens; and G-shaped and around 290 lumens.

Issue 16: DOE requests feedback on the technological feasibility of AC LED lamp products – including details on shapes, bases, and lumen ranges. DOE also requests information on whether other manufacturers already offer or are planning to introduce AC LED lamps to the market.

Issue 17: DOE requests feedback on what impact, if any, the five screening criteria described in this section would have on each of the technology options listed in Table II.3 of this document with respect to their potential use in CFLKs. Similarly, DOE seeks information regarding how these same criteria would affect any other technology options not already identified in this document with respect to their potential use in CFLKs.

Issue 18: With respect to the screened-out technology options listed in Table II.4 of this document, DOE seeks information on whether these options would, based on current and projected assessments regarding each of them, remain screened out under the five screening criteria described in this section. With respect to each of these technology options, what steps, if any, could be (or have already been) taken to facilitate the introduction of each option as a means to improve the energy performance of CFLKs and the potential to impact consumer utility of the CFLK.

3. Efficiency Analysis

DOE typically uses one of two approaches to develop energy efficiency levels for the engineering analysis: (1) relying on observed efficiency levels in the market (*i.e.*, the efficiency-level approach), or (2) determining the incremental efficiency improvements associated with incorporating specific design options to a baseline model (*i.e.*, the design-option approach). Using the efficiency-level approach, the efficiency levels established for the analysis are determined based on the market distribution of existing products (in other words, based on the range of efficiencies and efficiency level "clusters" that already exist on the market). Using the design option approach, the efficiency levels established for the analysis are determined through detailed engineering calculations and/or computer simulations of the efficiency improvements from implementing specific design options that have been identified in the technology assessment. DOE may also rely on a combination of these two approaches. For example, the

efficiency-level approach (based on actual products on the market) may be extended using the design option approach to interpolate to define "gap fill" levels (to bridge large gaps between other identified efficiency levels) and/or to extrapolate to the max-tech level (particularly in cases where the max-tech level exceeds the maximum efficiency level currently available on the market).

In the January 2016 Final Rule DOE used an efficiency-level approach, determining efficiency levels based generally on commercially available lamps that incorporate the design options identified in the technology assessment and screening analysis. 81 FR 580, 592. For each established product class, DOE selects a baseline model as a reference point against which any changes resulting from new or amended energy conservation standards can be measured. The baseline model in each product class represents the characteristics of common or typical products in that class. Typically, a baseline model is one that meets the current minimum energy conservation standards and provides basic consumer utility. The current standards for CFLKs are based on efficacy and are found at 10 CFR 430.32(s)(6).

Issue 19: DOE requests feedback on whether the current established energy conservation standards are appropriate baselines for CFLKs to evaluate whether to amend the current energy conservation standards for these products.

Issue 20: DOE requests data and information regarding the most common models of CFLKs (*i.e.* whether they use lamps or integrated SSL circuitry, the number of light sources, the total lumen output of the fixture, *etc.*). DOE requests information on the percent of CFLKs that have sockets for lamps versus the percent that have integrated SSL circuitry.

Issue 21: DOE requests feedback on the common characteristics of light sources found in CFLKs (*i.e.,* technology, base type, wattage, efficacy, color rendering index ("CRI"), correlated color temperature ("CCT"), and lifetime). DOE requests information on the percent of CFLKs with sockets that are shipped with CFLs versus LED lamps.

Issue 22: DOE requests feedback on the appropriate baseline models for any newly analyzed product classes that are not currently in place, as discussed in section II.B.1 of this document. For newly analyzed product classes, DOE requests energy use data to develop a baseline relationship between energy use and adjusted volume.

In the January 2016 Final Rule, DOE selected a baseline and more-efficacious substitutes taking into consideration two different substitution scenarios: (1) a lamp replacement scenario and (2) a light kit replacement scenario (*i.e.,* accounting for changes to the fixture). In both scenarios, the baseline lamp was kept the same and the baseline fixture was assumed to have the most common total socket number of two for CFLKs. In the lamp replacement scenario, the more-efficacious substitute was required to have the same base type as the baseline lamp and no changes to the fixture were made. In the light kit replacement scenario, a more-efficacious fixture was chosen, allowing for a more-efficacious lamp substitute with a different base type than the baseline lamp and with a different number of sockets than the baseline fixture. For additional discussion of the baseline selected for the January 2016 Final Rule, see chapter 5 of the January 2016 Final Rule TSD. 81 FR 580, 594-595.

In the January 2016 Final Rule, DOE ensured potential substitutions maintained lumen output within 10 percent of the baseline lamp lumen output (for the lamp replacement scenario) and within 10 percent of the baseline fixture lumen output (for the light kit replacement scenario). 81 FR 580, 594. In the January 2016 Final Rule TSD, DOE ensured that a wide variety

of design options would be available at all efficacy levels ("ELs") (*e.g.,* E12, E17, and G9 bases and candle, flame tip, and torpedo shapes). DOE also ensured that dimmable lamps and lamps with a range of CCTs and lumen packages were available at all ELs. Further, DOE confirmed that CFLKs with consumer-replaceable and non-consumer replaceable LED modules and drivers would meet EL 3. See chapter 5 of the January 2016 Final Rule TSD.

In the January 2016 Final Rule, DOE developed a continuous equation to establish ELs, specifying a minimum lamp efficacy for a lumen package. To develop the general form of the equation, DOE evaluated lamps with similar characteristics, such as technology, bulb shape, and lifetime, across a range of lumen outputs. 81 FR 580, 596.

The maximum available efficacies analyzed in the January 2016 Final Rule are provided in Table II.5 and Table II.6 of this document. The maximum available efficacy level is the highest efficacy unit currently available on the market.

Table II.5 Max Tech Efficacy from the January 2016 Final Rule (Lamp Replacement Scenario)

Lamp Type	Base Type	Bulb Shape	Wattage W	Initial Lumen Output lm	Efficacy lm/W	CRI	CCT K	Lamp Lifetime hr
LED	E26	A19	8	820	102.5	80	2,700	25,000

Table II.6 Max Tech Efficacy from the January 2016 Final Rule (Light Kit Replacement Scenario)

Lamp Type	Base Type	Bulb Shape	Fixture Sockets	Lamp Watt-age W	Fixture Wattage W	Lamp Initial Lumen Output lm	Fixture Initial Lumen Output lm	Efficacy lm/W	CRI	CCT K	Lamp Life hr
LED	E26	A21	1	15	15	1,600	1,600	106.7	82	2,700	25,000

Issue 23: DOE seeks input on whether the max-tech levels are appropriate and technologically feasible for potential consideration as possible energy conservation standards for the products at issue – and if not, why not.

Issue 24: DOE seeks feedback on what design options would be incorporated at a max-tech efficacy level, and the efficacies associated with those levels. As part of this request, DOE also seeks information as to whether there are limitations on the use of certain combinations of design options.

Issue 25: DOE seeks information on the efficacy of available CFLKs, from baseline model to max tech level, and the percent of CFLKs available at each level of efficacy. DOE also seeks feedback on whether the efficacy distribution varies based on whether the CFLK includes individual lamps or integrated SSL circuitry and whether the efficacy distribution is expected to change over time.

D. Economic Justification

In determining whether a proposed energy conservation standard is economically justified, DOE analyzes, among other things, the potential economic impact on consumers, manufacturers, and the Nation. DOE seeks comment on whether there are economic barriers to the adoption of more-stringent energy conservation standards. DOE also seeks comment and data on any other aspects of its economic justification analysis from the January 2016 Final Rule that may indicate whether a more-stringent energy conservation standard would be economically justified or cost effective.

While DOE's request for information is not limited to the following issues, DOE is particularly interested in comment, information, and data on the following.

1. Cost Analysis

The cost analysis portion of the engineering analysis is conducted using one or a combination of cost approaches. The selection of cost approach depends on a suite of factors, including availability and reliability of public information, characteristics of the regulated product, and the availability and timeliness of purchasing the CFLK on the market. The cost approaches are summarized as follows:

- *Physical teardowns*: Under this approach, DOE physically dismantles a commercially available product, component-by-component, to develop a detailed bill of materials for the product.

- *Catalog teardowns*: In lieu of physically deconstructing a product, DOE identifies each component using parts diagrams (available from manufacturer websites or appliance repair websites, for example) to develop the bill of materials for the product.

- *Price surveys*: If neither a physical nor catalog teardown is feasible (for example, for tightly integrated products such as fluorescent lamps, which are infeasible to disassemble and for which parts diagrams are unavailable) or cost-prohibitive and otherwise impractical (*e.g.* large commercial boilers), DOE conducts price surveys using publicly available pricing data published on major online retailer websites and/or by soliciting prices from distributors and other commercial channels.

In the January 2016 Final Rule TSD, DOE used a price-survey approach to develop consumer prices for the representative lamp unit at each EL. To do so, DOE determined the

consumer price of the CFLK and then determined the portion of that price attributable to the lamp packaged with the CFLK. Based on feedback from manufacturer interviews, DOE identified three main distribution channels for CFLKs: electrical/specialty centers, home centers, and lighting showrooms. DOE compared the consumer prices from each channel to manufacturer-suggested distributor net prices of ceiling fans sold with CFLKs to determine premiums for each distribution channel. Then using estimated shipments going through each channel based on manufacturer interviews, DOE applied the following weightings to develop one premium: electrical/specialty channel at 12 percent, home center channel at 80 percent, and lighting showroom channel at 8 percent. DOE applied the average shipment-weighted premium to the distributor net prices of the ceiling fans sold with CFLKs to obtain their consumer price. DOE then applied 20 percent to this price to determine the consumer price of just the CFLK. See chapter 7 of the January 2016 Final Rule TSD.

Finally, DOE applied the percentage that comprises the lamp component of the CFLK to the CFLK consumer price. Based on manufacturer feedback and stakeholder comments, DOE applied 15 percent for a CFLK with a 13 W spiral CFL to obtain the consumer price of the lamp component of the CFLK. For other representative lamp units, DOE applied ratios of their consumer prices and the 13 W spiral CFL consumer price. See chapter 7 of the January 2016 Final Rule TSD.

For the light kit fixture scenario, DOE also included the incremental cost due to changes in socket configuration when applicable. 81 FR 580, 598. Based on manufacturer feedback, DOE estimated that medium screw base (E26) sockets cost $0.15 to the manufacturer and GU24 and pin-base sockets cost $0.35 to the manufacturer. See chapter 7 of the January 2016 Final Rule TSD.

For additional discussion regarding the development of end-user prices for the January

2016 Final Rule, see chapter 6 of the January 2016 Final Rule TSD.

Issue 26: DOE requests comments on the whether the described methodology for the pricing analysis is appropriate as well as information on the existence of any distribution channels other than those described and their assigned weighting.

Issue 27: DOE also requests information on the percentage of consumer price the CFLK comprises of a ceiling fan; and the percentage of consumer price the lamp component(s) comprises of a CFLKs and whether they are different for different lamp types (*e.g.,* CFL, LED lamp).

Issue 28: DOE requests information on the consumer price of a socket in a CFLK and whether they are different for different socket types (*e.g.,* E12, GU24, pin-base).

Issue 29: DOE requests information on the difference in cost (if any) between a CFLK providing a certain light output using individual lamps and a CFLK providing the same light output using integrated SSL circuitry. What are the primary factors affecting the cost of a CFLK using integrated SSL circuitry?

1. Life-Cycle Cost and Payback Period Analysis

DOE conducts the life-cycle cost ("LCC") and payback period ("PBP") analysis to evaluate the economic effects of potential energy conservation standards for CFLKs on individual consumers. The effect of new or amended energy conservation standards on individual consumers usually involves a reduction in operating cost and an increase in purchase cost. For any given EL, DOE measures the PBP and the change in LCC relative to an estimated baseline level. The LCC is the total consumer expense of a product over its lifetime, consisting

of total installed cost (product price, sales tax, and installation costs) plus operating costs (expenses for energy use, maintenance, and repair). To compute the operating costs, DOE discounts future operating costs to the time of purchase and sums them over the lifetime of the product. The PBP is the estimated amount of time (in years) it takes consumers to recover the increased purchase cost (including installation) of a more-efficient product through lower operating costs. DOE calculates the PBP by dividing the change in purchase cost at higher efficiency levels by the change in annual operating cost for the year that amended or new standards are assumed to take effect.

For each potential standard level, DOE measures the change in LCC based on the estimated change in efficacy distribution in the standards case relative to the estimated efficacy distribution in the no-new-standards case. These efficacy distributions include market trends for products that may exceed the efficacy associated with a given standard level as well as the current energy conservation standards. In contrast, the PBP for a given EL is measured relative to the baseline product.

Table II.7 summarizes the approach and data DOE used to derive inputs to the LCC and PBP calculations for CFLKs in the January 2016 Final Rule. See chapter 8 of the January 2016 Final Rule TSD and its appendices for more detail.

Table II.7 Summary of Inputs and Methods for the LCC and PBP Analysis in the January 2016 Final Rule*

Inputs	Source/Method
Product Cost**	Multiplied the weighted-average consumer price of each CFLK lamp and socket (determined in the product price determination) with a scaling factor to account for the total weighted-average CFLK lumen output. For LED lamps, DOE used a price learning analysis to project CFLK lamp prices to the compliance year.
Sales Tax	Derived 2019 population-weighted-average tax values for each state based on Census population projections and sales tax data from Sales Tax Clearinghouse.
Disposal Cost	Assumed 35% of commercial CFLs are disposed of at a cost of $0.70 per CFL. Assumptions based on industry expert feedback and a Massachusetts Department of Environmental Protection mercury lamp recycling rate report.
Annual Energy Use	Derived in the energy use analysis. Varies by geographic location and room type in the residential sector and by building type in the commercial sector.
Energy Prices	Electricity: Based on 2014 marginal electricity price data from the Edison Electric Institute. Variability: Marginal electricity prices vary by season, U.S. region, and baseline electricity consumption level.
Energy Price Trends	Based on *AEO 2015* price forecasts.
Lamp Replacements	For lamp failures during the lifetime of the CFLK, consumers replace lamps with lamp options available in the market that have the same base type and provide a similar lumen output to the initially packaged lamps.
Residual Value	Represents the value of surviving lamps at the end of the CFLK lifetime. DOE discounts the residual value to the start of the analysis period and calculates it based on the remaining lamp's lifetime and price in the year the CFLK is retired.
Product Lifetime	Based on a ceiling fan lifetime distribution, with a mean of 13.8 years.
Discount Rates	Approach involves identifying all possible debt or asset classes that might be used to purchase the considered appliances, or might be affected indirectly. Primary data source was the Federal Reserve Board's Survey of Consumer Finances.
Efficacy Distribution	Estimated by the market-share module of shipments model.

* See chapter 8 of the January 2016 Final Rule TSD for references for the data sources mentioned in this table.
** DOE did not take into account installation cost as one of the total installed cost inputs. DOE assumed that the installation cost, which represents all costs required to install the CFLK, was not affected by changes in product efficacy and was therefore the same for all ELs for both the residential and commercial sectors.

Issue 30: DOE requests comment on whether the methodology described in the January 2016 Final Rule is appropriate.

Issue 31: DOE requests comments on whether the inputs described in Table II.7 of this document need to be changed beyond updating to a more recent version of the source cited in the table if an updated version exists.

3. Manufacturer Impact Analysis

The purpose of the manufacturer impact analysis ("MIA") is to estimate the financial impact of amended energy conservation standards on manufacturers of CFLKs, and to evaluate

the potential impact of such standards on direct employment and manufacturing capacity. The MIA includes both quantitative and qualitative aspects. The quantitative part of the MIA primarily relies on the Government Regulatory Impact Model ("GRIM"), an industry cash-flow model adapted for the product in this analysis, with the key output of industry net present value ("INPV"). The qualitative part of the MIA addresses the potential impacts of energy conservation standards on manufacturing capacity and industry competition, as well as factors such as product characteristics, impacts on particular subgroups of firms, and important market and product trends.

As part of the MIA, DOE analyzes impacts of amended energy conservation standards on subgroups of manufacturers of covered products, including small business manufacturers. DOE uses the Small Business Administration's ("SBA's") small business size standards to determine whether manufacturers qualify as small businesses, which are listed by the applicable North American Industry Classification System ("NAICS") code.[10] Manufacturing of CFLKs is classified under NAICS 335210, "Small Electrical Appliance Manufacturing," and the SBA sets a threshold of 1,500 employees or less for a domestic entity to be considered as a small business. This employee threshold includes all employees in a business' parent company and any other subsidiaries.

One aspect of assessing manufacturer burden involves examining the cumulative impact of multiple DOE standards and the product-specific regulatory actions of other Federal agencies that affect the manufacturers of a covered product or equipment. While any one regulation may not impose a significant burden on manufacturers, the combined effects of several existing or impending regulations may have serious consequences for some manufacturers, groups of manufacturers, or an entire industry. Assessing the impact of a single regulation may overlook

[10] Available online at *https://www.sba.gov/document/support--table-size-standards*.

this cumulative regulatory burden. For these reasons, DOE conducts an analysis of cumulative regulatory burden as part of its rulemakings pertaining to appliance efficiency.

Issue 32: To the extent feasible, DOE seeks the names and contact information of any domestic or foreign-based manufacturers that distribute CFLKs in the United States.

Issue 33: DOE identifies small businesses as a subgroup of manufacturers that could be disproportionally impacted by amended energy conservation standards. DOE requests the names and contact information of small business manufacturers, as defined by the SBA's size threshold, of CFLKs that manufacture products in the United States. In addition, DOE requests comment on any other manufacturer subgroups that could be disproportionally impacted by amended energy conservation standards. DOE requests feedback on any potential approaches that could be considered to address impacts on manufacturers, including small businesses.

Issue 34: DOE requests information regarding the cumulative regulatory burden impacts on manufacturers of CFLKs associated with (1) other DOE standards applying to different products that these manufacturers may also make and (2) product-specific regulatory actions of other Federal agencies. DOE also requests comment on its methodology for computing cumulative regulatory burden and whether there are any flexibilities it can consider that would reduce this burden while remaining consistent with the requirements of EPCA.

III. Submission of Comments

DOE invites all interested parties to submit in writing by the date under the **DATES** heading, comments and information on matters addressed in this notification and on other

matters relevant to DOE's early assessment of whether more-stringent energy conservation standards are warranted for ceiling fan light kits.

Submitting comments via https://www.regulations.gov. The *https://www.regulations.gov* web page requires you to provide your name and contact information. Your contact information will be viewable to DOE Building Technologies Office staff only. Your contact information will not be publicly viewable except for your first and last names, organization name (if any), and submitter representative name (if any). If your comment is not processed properly because of technical difficulties, DOE will use this information to contact you. If DOE cannot read your comment due to technical difficulties and cannot contact you for clarification, DOE may not be able to consider your comment.

However, your contact information will be publicly viewable if you include it in the comment or in any documents attached to your comment. Any information that you do not want to be publicly viewable should not be included in your comment, nor in any document attached to your comment. Following such instructions persons viewing comments will see only first and last names, organization names, correspondence containing comments, and any documents submitted with the comments.

Do not submit to *https://www.regulations.gov* information for which disclosure is restricted by statute, such as trade secrets and commercial or financial information (hereinafter referred to as Confidential Business Information ("CBI")). Comments submitted through *https://www.regulations.gov* cannot be claimed as CBI. Comments received through the website will waive any CBI claims for the information submitted. For information on submitting CBI, see the Confidential Business Information section.

DOE processes submissions made through *https://www.regulations.gov* before posting. Normally, comments will be posted within a few days of being submitted. However, if large volumes of comments are being processed simultaneously, your comment may not be viewable for up to several weeks. Please keep the comment tracking number that *https://www.regulations.gov* provides after you have successfully uploaded your comment.

Submitting comments via email. Comments and documents submitted via email also will be posted to *https://www.regulations.gov*. If you do not want your personal contact information to be publicly viewable, do not include it in your comment or any accompanying documents. Instead, provide your contact information on a cover letter. Include your first and last names, email address, telephone number, and optional mailing address. The cover letter will not be publicly viewable as long as it does not include any comments.

Include contact information each time you submit comments, data, documents, and other information to DOE. Faxes will not be accepted.

Comments, data, and other information submitted to DOE electronically should be provided in PDF (preferred), Microsoft Word or Excel, WordPerfect, or text (ASCII) file format. Provide documents that are not secured, written in English and free of any defects or viruses. Documents should not contain special characters or any form of encryption and, if possible, they should carry the electronic signature of the author.

Campaign form letters. Please submit campaign form letters by the originating organization in batches of between 50 to 500 form letters per PDF or as one form letter with a list of supporters' names compiled into one or more PDFs. This reduces comment processing and posting time.

Confidential Business Information. According to 10 CFR 1004.11, any person submitting information that he or she believes to be confidential and exempt by law from public disclosure should submit via email two well-marked copies: one copy of the document marked confidential including all the information believed to be confidential, and one copy of the document marked "non-confidential" with the information believed to be confidential deleted. DOE will make its own determination about the confidential status of the information and treat it according to its determination.

It is DOE's policy that all comments may be included in the public docket, without change and as received, including any personal information provided in the comments (except information deemed to be exempt from public disclosure).

DOE considers public participation to be a very important part of the process for developing energy conservation standards. DOE actively encourages the participation and interaction of the public during the comment period in each stage of this process. Interactions with and between members of the public provide a balanced discussion of the issues and assist DOE. Anyone who wishes to be added to the DOE mailing list to receive future notices and information about this process or would like to request a public meeting should contact Appliance and Equipment Standards Program staff at (202) 287-1445 or via e-mail at *ApplianceStandardsQuestions@ee.doe.gov*.

Signing Authority

This document of the Department of Energy was signed on May 26, 2021, by Kelly Speakes-Backman, Principal Deputy Assistant Secretary and Acting Assistant Secretary for Energy Efficiency and Renewable Energy, pursuant to delegated authority from the Secretary of Energy. That document with the original signature and date is maintained by DOE. For administrative purposes only, and in compliance with requirements of the Office of the Federal Register, the undersigned DOE Federal Register Liaison Officer has been authorized to sign and submit the document in electronic format for publication, as an official document of the Department of Energy. This administrative process in no way alters the legal effect of this document upon publication in the *Federal Register*.

Signed in Washington, DC, on May 27, 2021.

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Treena V. Garrett,
Federal Register Liaison Officer,
U.S. Department of Energy.

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